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iron and steel, may be so arranged that the body is impervious to the ether in one direction and yet will allow its free transit in a direction at right angles with the impervious axis. Let such a body be freely suspended, and, as a vane indicates the direction of a current of air, it will indicate the direction of an ethereal current by its impervious axis assuming a position at right angles with the direction of such current. We have here, therefore, a possible physical cause sufficient to produce the observed phenomena of magnetism.

As obstructions to a current of air will cause vibrations sufficient to produce sound, so obstructions to a current of ether should produce light; and as we have, at all times, an in-flowing current of ether in polar regions, the interference, which it encounters in its passage through the atmosphere, should, and probably does, produce the polar lights, or auroras.

Let it be granted that we have assigned the true cause of magnetism and the polar lights, should we expect these phenomena to indicate great physical disturbance in the sun? In attempting to answer this question I will assume that the ether, though imponderable, is the ultimate state or condition of ponderable matter, and that ponderability, or gravity, is a result of its elastic pressure and vibratory motion, and that it is continually being absorbed, or converted into ponderable matter by the sun. Hence, in the great chemical changes which transpire in the sun and which are manifested by the immense cyclones that are visible, even to the naked eye, at the ditance of 95,000,000 miles, I conclude that a vast amount of ether is absorbed by the sun, the result of which must be a motion of translation of the ether in the surrounding space toward the sun; and as the elastic force of the ether is supposed to be in equilibrium with its centrifugal force while the sun is in its normal condition, this increased current toward the sun will diminish its elastic force about the earth, and the centrifugal force will for a time, and until the equilibrium is restored, increase the tendency to a vacuum along the axis and, consequently, increase the polar currents, and we should have the phenomena of auroras and increased magnetic force.

J. E. HENDRICKS.

Proposition. BY R. J. ADCOCK.—The resultant in any given direction of the mutual attraction between a unit mass concentrated at a given point and a volume of density δ,

$$= \delta k_1 \int_b^a S dx,$$

where x = distance from, and S = solid angle subtended at the given point by, a plane secton of the volume perpendicular to the given direction.